

1 What I claim is:

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3 1. A genetically modified human microglia cell maintained as a stable cell line in-vitro  
4 comprising:

5 a modified microglia cell of human origin which

6 (i) has demonstrable phagocytic properties;

7 (ii) produces progeny continuously while maintained in culture;

8 (iii) presents at least CD11b and CD68 as surface antigens; and

9 (iv) contains human genomic DNA which has been genetically modified to

10 include a viral vector carrying at least one DNA segment encoding an exogenous gene for  
11 intracellular expression.

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13 2. The genetically modified human microglia cell as recited in claim 1 wherein said  
14 viral vector is an amphotropic retroviral viral vector.

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16 3. The genetically modified human microglia cell as recited in claim 1 wherein said  
17 viral vector includes as exogenous DNA sequence encoding a v-myc gene.

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19 4. The genetically modified human microglia cell as recited in claim 1 further  
20 comprising the presence of the surface antigen RCA-lectin;

21

22 5. The genetically modified human microglia cell as recited in claim 1 further  
23 comprising the presence of P<sub>2Y1</sub> receptors.

1        6.        The genetically modified human microglia cell as recited in claim 1 further  
2        comprising the presence of the surface antigens HLA-ABC (MHC class I); and HLA-DR  
3        (MHC class II).  
4

5        7.        The genetically modified human microglia cell as recited in claim 1 wherein said cell  
6        expresses at least one active substance selected from the group consisting of cytokines and  
7        chemokines.  
8

9        8.        The genetically modified human microglia cell as recited in claim 6 wherein said  
10        expressed active substance is selected from the group consisting of MIP-1 $\beta$ , MCP-1, IL-1 $\beta$ ,  
11        IL-6, IL-8, IL-12, and IL-15.  
12

13        9.        The genetically modified human microglia cell as recited in claim 1 wherein said cell  
14        is in a non-stimulated state.  
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16        10.       The genetically modified human microglia cell as recited in claim 1 wherein said cell  
17        is in a stimulated state.  
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19        11.       The genetically modified human microglia cell as recited in claim 10 wherein said  
20        stimulated cell overexpresses at least one pharmacologically active composition selected  
21        from the group consisting of cytokines and chemokines.  
22

1 12. The genetically modified human microglia cell as recited in claim 1 wherein said cell  
2 it utilized for screening of compounds for the treatment of autoimmune disease.

3  
4 13. The genetically modified human microglia cell as recited in claim 1 wherein said cell  
5 is utilized for the treatment of a neurodegenerative disorder.

6  
7 14. The genetically modified human microglia cell as recited in claim 1 wherein said cell  
8 is utilized for the treatment of at least one pathology selected from the group consisting of  
9 Alzheimer disease, Parkinson disease, Huntington disease, amyotrophic lateral sclerosis,  
10 stroke, spinal cord injuries, and ataxia.

11  
12 15. A method for transforming human microglial cells into a genetically modified cell  
13 line, said method comprising  
14 obtaining human microglial cells;  
15 culturing said human microglial cells;  
16 transfecting said cultured human microglial cells using a viral vector encoding at least  
17 an oncogene; and  
18 expanding said transfectants in culture media as an immortalized cell line.

19  
20 16. The method as recited in claim 15 wherein said oncogene is the v-myc oncogene.

21  
22 17. The method as recited in claim 15 wherein said viral vector is an amphotrophic  
23 replication incompetent retroviral vector.